

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of

Masahide MOHRI, et al.

Continuation Application of
Appln. No.: 08/416,738

Group Art Unit: Not Assigned

Confirmation No.: Not Assigned

Examiner: Not Assigned

Filed: June 27, 2001

For: METAL OXIDE POWDER AND METHOD FOR THE PRODUCTION OF THE
SAME

PRELIMINARY AMENDMENT

Commissioner for Patents
Washington, D.C. 20231

Sir:

Prior to examination, please amend the above-identified application as
follows:

IN THE SPECIFICATION:

Before the first line insert the following paragraph:

This is a continuation of Application No. 08/416,738 filed August 11, 1994,
the disclosure of which is incorporated herein by reference. The international
application to which benefit is claimed was not published under PCT Article 21(2) in
English.

0989455-062701

Replace the first paragraph of page 13 with the following paragraph:

A suitable calcination temperature is not necessarily critical since it depends on the kind of the intended metal oxide, the kinds and concentrations of the hydrogen halide, the molecular halogen and the component prepared from the molecular halogen and steam, or the calcination time. It is preferably from 500 to 1500°C, more preferably from 600 to 1400°C. When the calcination temperature is lower than 500°C, a long time is necessary for calcination. When the calcination temperature exceeds 1500°C, many agglomerated particles tend to be contained in the produced metal oxide powder.

Replace TABLE 2 on Page 34 with the following:

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Table 2

Ex. No.	Oxide	Calcination conditions											Maintaining temp. (°C)	Maintaining time (min.)	
		Atmosphere gas (vol. %)					Gas introduction temp. (°C)								
		HCl	HBr	HF	Cl ₂	N ₂	H ₂ O	H ₂	Air						
11	TiO ₂	100										Room temp.	800	30	
12	TiO ₂	45					10					45	Room temp.	1100	30
13	TiO ₂	100											Room temp.	1100	30
14	TiO ₂	100											800	1100	30
15	TiO ₂	30						70					800	1100	30
16	TiO ₂	30										70	800	800	30
17	TiO ₂				30	60	10						800	1100	30
18	TiO ₂				100								800	1100	30
19	TiO ₂				30	60	10						800	1100	30
C. 1	TiO ₂											100	Room temp.	1100	180
C. 2	TiO ₂											100	Room temp.	1100	180

IN THE CLAIMS:

Cancel claims 2, 3, 29 and 30.

Please enter the following amended claims:

1 (amended). A metal oxide powder except α -alumina, comprising polyhedral particles having at least 6 planes each, a number average particle size of from 0.1 to 300 μm , and a D_{90}/D_{10} ratio of 5 or less where D_{10} and D_{90} are particle sizes at 10% and 90% accumulation, respectively from the smallest particle size side in a cumulative particle size curve of the particles, and

wherein a ratio of agglomerated particle size to a primary particle size is from 1 to 6.

4 (amended). The metal oxide powder according to claim 3, wherein said ratio of an agglomerated particle size to a primary particle size is from 1 to 3.

5 (amended). The metal oxide powder according to any one of claims 1 or 4, wherein said metal oxide is a simple metal oxide of a metal element selected from the group consisting of the metal elements of the Groups Ib, II, III, IV, V, VI, VII and VIII of the Periodic Table, except α -alumina powder.

6 (amended). The metal oxide powder according to any one of claims 1 or 4,

wherein said metal oxide is a simple metal oxide titanium.

7 (amended). The metal oxide powder according to any one of claims 1 or 4, wherein said metal oxide is a simple metal oxide of a metal selected from the group consisting of magnesium, zirconium and iron.

8 (amended). The metal oxide powder according to any one of claims 1 or 4, wherein said metal oxide is a simple metal oxide of cerium.

9 (amended). The metal oxide powder according to any one of claims 1 or 4, wherein said metal oxide is a simple metal oxide of a metal selected from the group consisting of indium and tin.

10 (amended). The metal oxide powder according to any one of claims 1 or 4, wherein said metal oxide is a simple metal oxide of a metal selected from the group consisting of zinc, cadmium, gallium, germanium, niobium, tantalum, antimony, bismuth, chromium, molybdenum, manganese, cobalt, nickel and uranium.

11 (amended). A rutile type titanium oxide powder comprising polyhedral particles each having at least 8 planes, a number average particle size of from 0.1 to 300 μm , a D_{90}/D_{10} ratio of 5 or less where D_{10} and D_{90} are particle sizes at 10% and

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90% accumulation, respectively from the smallest particle size side in a cumulative particle size curve of the particles, and a ratio of agglomerated particle size to primary particle size of the particles is from 1 to 6.

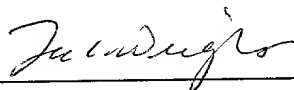
28 (amended). The method according to claim 13 or 14, wherein said metal oxide powder or metal oxide precursor powder is a metal oxide powder or metal oxide precursor powder of a metal selected from the group consisting of magnesium, titanium, and iron.

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REMARKS

Entry and consideration of this Preliminary Amendment is respectfully
requested.

Respectfully submitted,



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APPENDIX

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

The specification is changed as follows:

Before the first line the following sentence is inserted:

This is a continuation of Application No. 08/416,738 filed August 11, 1994, the disclosure of which is incorporated herein by reference. The international application to which benefit is claimed was not published under PCT Article 21(2) in English.

Page 13, first paragraph, is replaced with the following paragraph:

A suitable calcination temperature is not necessarily critical since it depends on the kind of the intended metal oxide, the kinds and concentrations of the hydrogen halide, the molecular halogen and the component prepared from the molecular halogen and steam, or the calcination time. It is preferably from 500 to 1500°C, more preferably from 600 to 1400°C. When the calcination [time] temperature is lower than 500°C, a long time is necessary for calcination. When the calcination temperature exceeds 1500°C, many agglomerated particles tend to be contained in the produced metal oxide powder.

The Table 2 on Page 34 is amended as follows:

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Table 2

Ex. No.	Oxide	Calcination conditions										Maintaining temp. (°C)	Maintaining time (min.)
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		HCl	HBr	HF	Cl ₂	N ₂		H ₂ O	H ₂	Air			
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12	TiO ₂	45					10		45		Room temp.	1100	30
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15	TiO ₂	30						70			800	1100	30
16	TiO ₂	30							70		800	800	30
17	TiO ₂				30	60	10				800	1100	30
18	TiO ₂				100				[45]		800	1100	30
19	TiO ₂				30	60	10				800	1100	30
C. 1	TiO ₂								100		Room temp.	1100	180
C. 2	TiO ₂								100		Room temp.	1100	180

IN THE CLAIMS:

Claims 2, 3, 29 and 30 are canceled.

The claims are amended as follows:

1 (amended). A metal oxide powder except α -alumina, comprising polyhedral particles having at least 6 planes each, a number average particle size of from 0.1 to 300 μm , and a D_{90}/D_{10} ratio of [10] 5 or less where D_{10} and D_{90} are particle sizes at 10% and 90% accumulation, respectively from the smallest particle size side in a cumulative particle size curve of the particles, and

wherein a ratio of agglomerated particle size to a primary particle size is from 1 to 6.

4 (amended). The metal oxide powder according to claim 3, wherein said ratio of [a primary] an agglomerated particle size to [an agglomerated] a primary particle size is from 1 to 3.

5 (amended). The metal oxide powder according to any one of claims 1 [to] or 4, wherein said metal oxide is a simple metal oxide of a metal element selected from the group consisting of the metal elements of the Groups Ib, II, III, IV, V, VI, VII and VIII of the Periodic Table, except α -alumina powder.

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6 (amended). The metal oxide powder according to any one of [clams] claims 1 [to] or 4, wherein said metal oxide is a simple metal oxide titanium.

7 (amended). The metal oxide powder according to any one of claims 1 [to] or 4, wherein said metal oxide is a simple metal oxide of a metal selected from the group consisting of magnesium, zirconium and iron.

8 (amended). The metal oxide powder according to any one of claims 1 [to] or 4, wherein said metal oxide is a simple metal oxide of cerium.

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10 (amended). The metal oxide powder according to any one of claims 1 [to] or 4, wherein said metal oxide is a simple metal oxide of a metal selected from the group consisting of zinc, cadmium, gallium, germanium, niobium, tantalum, antimony, bismuth, chromium, molybdenum, manganese, cobalt, nickel and uranium.

11 (amended). A rutile type titanium oxide powder comprising polyhedral

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particles each having at least 8 planes, a number average particle size of from 0.1 to 300 μm , a D_{90}/D_{10} ratio of 5 or less where D_{10} and D_{90} are particle sizes at 10% and 90% accumulation, respectively from the smallest particle size side in a cumulative particle size curve of the particles, and a ratio of agglomerated particle size to primary particle size of the particles is from 1 to 6.

28 (amended). The method according to claim 13 or 14, wherein said metal oxide powder or metal oxide precursor powder is a metal oxide powder or metal oxide precursor powder of a metal selected from the group consisting of magnesium, titanium, [zirconium] and iron.